

**REMARKS****1. Rejection of claims 14, and 17-25 under 35 U.S.C. §112, 2<sup>nd</sup> paragraph: Rejections A- B.**

Applicants appreciate the removal of prior rejections A-D.

Claims 14, 17-25 stand rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter that applicants regard as the invention.

A. Claims 14 and 17-19 continue to stand rejected for reciting a method of making a coated substrate but failing to set forth how the coating is obtained from the composition applied to the substrate. It is the PTO's position that "[a] method step for curing the uncured composition must be set forth to provide a "coated substrate". If not, the claims set forth a substrate having an uncured composition thereon." (*Office Action of 11/20/02, page 2, 2<sup>nd</sup> paragraph.*)

Applicants appreciate the detailed basis of rejection but must respectfully disagree. As allowed by doctrine of claim differentiation, Applicants intentionally distinguished between a "coated substrate" and that of a "cured coated substrate". Applicants respectfully note that the application of a coating composition to a substrate produces a coated substrate.

As noted above, the doctrine of claim differentiation supports this interpretation of Applicants' claim 14. For example, Applicants' claim 15 adds the step of subjecting the coated substrate of claim 14 to UV radiation so as to produce a UV *cured* coated substrate. Also, claim 16 adds the step of subjecting the UV cured coated substrate of claim 15 to heat so as to produce a UV and thermally cured coated substrate. Likewise, these terms are also consistently used in dependent claims 20-23.

The first sentence of the second paragraph of Section 112 is a requirement for precision and definiteness of claim language. If the scope of subject matter embraced by a claim is clear and if the applicant has not otherwise indicated that he intends the claim to be of a different scope, then the claim particularly points out and distinctly claims the subject matter that the applicant regards as his invention. *In re Borkowski et al.*, 164 USPQ 642, (CCPA 1970)

However, Applicants have amended claims 14, 15 and 16 in an effort to resolve this matter.

Claim 14 has been amended to include a curing step as requested by the PTO. Support for this amendment may be found in paragraph [000123] on pages 28 and 29 of the Specification. Claims 15 and 16 have been amended so that they are consistent with the language of amended claim 14.

Entry of this amendment is respectfully requested. These amendments were not made earlier in view of the Undersigned's good faith belief that the foregoing arguments were reasonable. The instant amendments are now presented in an effort to place the Application in a condition suitable for a Notice of Allowance.

Reconsideration and removal of the rejection in light of the amendments to claims 14, 15, and 16 is respectfully requested.

B. Claims 20, 21, 22 and 23 are said to be confusing.

Claims 20, 21, 22, and 23 are said to be confusing because it is not clear what Applicants intend to add to the methods of the claims which they depend.

In response, Applicants have previously noted that these claims highlight the fact that the coating compositions of the invention are useful in the production of composite coatings containing multiple layers, i.e., primer(s), basecoats, topcoats, and/or clearcoats.

Claims 20-24 have been amended to better defined these aspects of the claimed invention. In particular, claims 20 and 21 have been amended to include a curing step as suggested by the PTO. No new matter has been added with these amendments. Support for these amendments may be found in Applicants' Specification on page 29, paragraph [000124], page 30, paragraph [00130], page 31, paragraph [00136], and pages 33-34, paragraphs [000142]-[000143]. The amendments to claims 22 and 23 clarify the nature of the one or more coatings that are applied in amended claim 20.

Entry of these amendments is respectfully requested. These amendments were not made earlier in view of the Undersigned's good faith belief that the previously presented arguments were reasonable. The instant amendments are now presented in an effort to place the Application in a condition suitable for a Notice of Allowance.

Reconsideration and removal of the rejection as to amended claims 20, 21, 22, and 23 is respectfully requested.

2. Rejection of claims 1-6, and 14-25 under 35 U.S.C. §103(a) as obvious over Lahrman et al., U.S. Patent 5,425,970, (hereafter "Lahrman" or "'970").

Applicants greatly appreciate the detailed basis of rejection but must respectfully disagree.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *MPEP 2143*

Lahrman does not meet this standard and thus fails to provide a prima facie case of nonobviousness. In particular, Lahrman fails to (1.) disclose all of the limitations required by Applicants' amended independent claims 1 and 14 and (2.) provide any motivation to modify Lahrman's disclosures so as to obtain Applicants' claimed inventions.

A. LAHRMAN'S TEACHINGS.

Lahrman teaches a process for the production of multi-coat lacquers that requires the use of two *separate* clearcoats. At least one of the clearcoats must be a heat-curable clearcoat while '...at least one *further* clear lacquer coat' must be applied that is a radiation-curable coating which is cured by UV radiation or electron beam radiation. See '970, *Abstract and claim 1*.

Thus, it is a required operational principle of Lahrman that two separate clearcoats be used, one that is heat cured and another that is cured with UV radiation or electron beam radiation. That is, Lahrman explicitly requires the use of two separate clearcoats, each of which clears by a distinct curing mechanism.

It is the PTO's position that Example 6 of the '970 patent teaches the use of a composition containing Applicants' components (a1) and (a3) and that it would be obvious to include a non-radiation curable binder containing isocyanate reactive groups because Example 6 uses a polyisocyanate.

The polyisocyanate in Example 6 is used only in the radiation curable clearcoat. The isocyanate groups react with hydroxyl functionality present on radiation curable components of the radiation curable clearcoat.

B. LAHRMANN FAILS TO DISCLOSE ALL OF THE LIMITATIONS REQUIRED IN APPLICANTS' CLAIMS 1 AND 14.

In particular, Lahrman fails to disclose or suggest the use of a thermally curable binder component (a2) that has at least two isocyanate-reactive functional groups, no functional bonds activatable upon exposure to ultraviolet radiation, and no more than 5% by weight of aromatic ring structures, based on the nonvolatile weight of thermally curable binder component (a2).

Nor does Lahrman disclose or suggest the importance of controlling the ratio of NCO groups to the sum of all isocyanate-reactive groups so that it is less than 1.30.

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 U.S.P.Q. 580 (C.C.P.A. 1974); *MPEP 1243.03* All words in a claim must be considered in judging the patentability of that claim against the prior art. *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970)

C. LAHRMANN FAILS TO PROVIDE A MOTIVATION TO LIMIT THE THERMALLY CURABLE BINDER COMPONENT TO ONLY THOSE ISOCYANATE FUNCTIONAL BINDER COMPONENTS HAVING LESS THAN 5% BY WEIGHT OF AROMATIC RING STRUCTURES.

Although col. 6, lines 65-69 and col. 7, lines 1-11 of the '970 patent discuss the optional use of binders which are not susceptible to radiation induced curing, nothing teaches or suggests the importance of using only those thermally curable binders having less than 5% by weight of aromatic ring structure. Indeed, Lahrman is completely silent as to this aspect of the inventions set forth in claims 1 and 14.

A prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art. *In re Rinehart*, 189 USPQ 143 (CCPA 1976)

In this case, Lahrman cannot suggest the claimed subject matter because Lahrman is completely silent as to any discussion of the importance of the structure of

a thermally curable binder. Indeed, Lahrman teaches that the use of such binders is optional only and is not necessary to the obtainment of desirable performance properties. Thus, nothing in Lahrman leads one of skill in the art to view thermally curable binders having less than 5% aromaticity as a necessary component.

Indeed, Applicants' review of the working examples, including example 6, indicates that none contain binders which cure solely through the application of heat. For example, the hydroxyl functional binders which react with the isocyanate in example 6 appear to contain double bonds.

There is no suggestion in Lahrman to do what Applicants have done in regards to the selection of component (a2). Accordingly, Lahrman cannot provide a prima facie case of obviousness with respect to the inventions of claims 1 and 14.

Reconsideration and removal of the rejection is respectfully requested.

**D. LAHRMAN FAILS TO PROVIDE A MOTIVATION TO LIMIT THE RATIO OF NCO GROUPS TO THE SUM OF ISOCYANATE-REACTIVE FUNCTIONAL GROUPS (a12) AND (a21) TO LESS THAN 1.30.**

Applicants greatly appreciate the PTO's detailed response in regards to this previously argued aspect of the rejection. However, Applicants must respectfully continue to disagree that

...it would have been obvious to one skilled in the art at the time of the invention to determine the ratio required in order to obtain the extent of crosslinking desired for a particular application because chemical crosslinking of isocyanate groups and isocyanate reactive groups is well known in the art.

*(Office Action of 11/20/03, page 4)*

or

[I]t would have been obvious to one skilled in the art at the time of the invention to determine the ratio required in order to obtain the extent of crosslinking desired for a particular application.

*(Office Action of 6/20/03, page 6)*

As previously discussed, Applicants' claimed invention involves more than the mere optimization of the extent of crosslinking. Rather, it involves the recognition that two different components, a thermally crosslinkable binder having less than 5%

aromaticity, and a radiation curable binder, must *both* have isocyanate reactive groups and that it is the sum of those two different sets of groups to NCO groups that must be less than 1.30. As discussed above, Lahrmann fails to recognize or suggest the importance of Applicants' component (a2), let alone the importance of the ratio of NCO to the isocyanate reactive groups of *both* components (a1) and (a2).

Indeed, as discussed above in section B, Lahrmann teaches that the thermally curable binder is optional and need not have isocyanate reactive groups. Rather, Lahrmann provides only a laundry list of nonradiation curable functional groups that might optionally be included.

Where the prior art gives no indication of which parameters are critical and no direction as to which of many possible choices is likely to be successful, the fact that the claimed combination falls within the scope of possible combinations taught therein does not render it unpatentably obvious. *In re O'Farrell*, 7 U.S.P.Q 1673 (CAFC 1988)

A prima facie case of obviousness can only be found if Lahrmann provides three distinct suggestions as to how the invention of Lahrmann should be modified in order to obtain Applicants' claimed invention. First, Lahrmann would have to suggest to one of skill in the art the superiority of isocyanate-reactive functional groups over all of the other functional groups that Lahrmann describes as suitable. Second, Lahrmann would have to motivate one of skill in the art to recognize that it is important to control the degree of isocyanate crosslinking with both radiation curable components and thermally curable components. Finally, there has to be some suggestion that the ratio must be less than 1.30.

Lahrmann fails to provide the motivation to move those of skill in the art in these three required directions. As a result, it is not 'mere optimization' to control the ratio of NCO groups to the sum of isocyanate reactive groups present in both the radiation curable binder and the thermally curable binder, let alone Applicants' particularly required thermally curable binder.

The motivation must come from the reference, not from the PTO with the benefit of hindsight from Applicants' invention. Even if the teachings of a primary reference could be modified to arrive at the claimed subject matter, the modification is not obvious unless the prior art also suggests the *desirability* of such a modification. *In re*

*Laskowski*, 10 U.S.P.Q.2d 1397, 1398 (Fed Cir. 1989). The statement that something is well known in the art does not supply the motivation necessary for a prima facie case of obviousness.

In this, case, modification of Lahrmann to obtain Applicants' invention of claim 1 is possible only with the benefit of Applicants' own teachings. Accordingly, it is respectfully submitted that Lahrmann fails to provide a prima facie case of obviousness as to independent claim 1 and likewise to those dependent claims that incorporate the limitations of claim 1. Reconsideration and removal of the rejection is respectfully requested.

3. Rejection of claims 1-25 under 35 U.S.C. §103(a) as obvious over DE 99 141, (hereafter "144").

The rejection as to DE '144 has been maintained. Applicants greatly appreciate the detailed basis of rejection but must continue to respectfully disagree.

A. THE TEACHINGS OF DE '144.

DE '144 is said to disclose compositions for SMC and BMC coatings that comprise a component (a1) corresponding to Applicants' component (a1), a component (a2) corresponding to Applicants' component (a3), and a component (a7) corresponding to Applicants' component (a2).

It is admitted by the PTO that DE '144 does not disclose or teach the required ratio of isocyanate groups to the *sum* of the isocyanate reactive functional groups of *both* the radiation curable binders as well as those binders which are solely thermally cured.

However, it is the PTO's position that

The compositions disclosed would be expected to provide the ratio set forth in the instant claims in the absence of evidence to the contrary for the following reason. The compositions disclosed advantageously have a ratio of functional groups (a12), such as hydroxyl, and (a22) such as isocyanate, in the range of 0.5:1 to 2:1 (NCO:OH of 1:0.5 to 1:2) and the addition of a component (a7) containing isocyanate groups would increase NCO:OH ratio 0.5:1 to >0.5:1 but less than 2:1. Alternatively, it would have been obvious to one skilled in the art at the time of the invention to determine the optimum ratio of isocyanate groups in crosslinking agent component (a7) to functional groups (a12) in (a1) and to functional groups in a thermally curable binder component (a7) required to obtain the desired degree of crosslinking in the cured product..

*(Office Action of 6/20/03, page 7)*

Applicants note that components (a1) and (a2) of DE '144 must contain functional bonds activatable by actinic radiation. Indeed, the combination of a thermally curable binder (a7) and crosslinking agent (a7) is required only when radiation curable component (a1) lacks any thermally curable reactive functional groups (a12).

Thus, the Undersigned must admit to some confusion as to the PTO's statement that "[t]he [DE '144] compositions disclosed advantageously have a ratio of functional groups (a12), such as hydroxyl, and (a22) such as isocyanate, in the range of 0.5:1 to 2:1 (NCO:OH of 1:0.5 to 1:2) and the addition of a component (a7) containing isocyanate groups would increase NCO:OH ratio 0.5:1 to >0.5:1 but less than 2:1." Functional groups (a22) of DE '144 will never be isocyanate. Similarly, it is not clear whether the functional groups of component (a7) would be those of a thermally curable binder, a crosslinking agent, or a mixture thereof such as when component (a7) is a mixture of a thermally curable binder and a crosslinking agent. Indeed, the teachings of the '144 reference indicate that optional component (a7) may be comprised solely of a crosslinking agent, OR a thermally curable binder, OR a mixture thereof.

Finally, Applicants note that the '144 teaches a large laundry list of components which are suitable for use as component (a7).

B. DE '144 DOES NOT DISCLOSE OR SUGGEST A MOTIVATION TO LIMIT THE RATIO OF NCO GROUPS TO THE SUM OF ISOCYANATE-REACTIVE FUNCTIONAL GROUPS (a12) AND (a21) TO LESS THAN 1.30

Thus, DE '144 teaches that component (a7) is optional and need not have any isocyanate component as crosslinking agent or thermally curable binders having isocyanate reactive groups. Rather, DE 144 provides a laundry list of suitable crosslinking agents, many of which are not isocyanate functional and similarly provides another laundry list of thermally curable binders that might optionally be included.

Where the prior art gives no indication of which parameters are critical and no direction as to which of many possible choices is likely to be successful, the fact that the



claimed combination falls within the scope of possible combinations taught therein does not render it unpatentably obvious. *In re O'Farrell*, 7 U.S.P.Q 1673 (CAFC 1988)

A prima facie case of obviousness can only be found if DE '144 provides several distinct suggestions as to how the invention of DE '144 should be modified in order to obtain Applicants' claimed invention. First, DE '144 would have to suggest to one of skill in the art the superiority of isocyanate-reactive functional groups over all of the other functional groups that DE '144 describes as suitable. Similarly, DE '144 would have to suggest a motivation to select only isocyanate functional crosslinking agents.

Second, DE '144 would have to motivate one of skill in the art to recognize that it is important to control the degree of isocyanate crosslinking with both radiation curable components and thermally curable components. The statements relied upon by the PTO show only that the thermally curable functional groups of the radiation curable components (a1) and (a2) are to be considered in the NCO ratio.

Finally, and perhaps most importantly, there has to be some suggestion that the ratio of NCO groups to the isocyanate reactive groups of solely thermally curable binders must be less than 1.30 or even the same as that contemplated for the thermally curable functional groups of the radiation curable components (a1) and (a2). DE '144 is completely silent as to this aspect of Applicants' invention.

The PTO's position that such ratios are considered 'In order to achieve crosslinking by the crosslinking agent' misses the importance of how the crosslinked matrix is obtained and to what degree crosslinking is desired. Applicants' invention is the first to recognize the importance of the different crosslinking sites obtained by radiation curable binders and thermally curable binders and to specify the particular NCO ratio for the combination.

The statement that something is well known or obvious in the art does not supply the motivation necessary for a prima facie case of obviousness. Most importantly, Applicants' claimed invention involves more than the mere optimization of the extent of crosslinking. Rather, as noted above, it involves the recognition that two different components, one thermally crosslinkable and one radiation crosslinkable, must both have isocyanate reactive groups and that it is the sum of those two different sets of groups to NCO groups that must be less than 1.30.

In contrast, DE '144 teaches only that the ratio of the isocyanate reactive groups (a12) to the isocyanate groups (a22) that should be considered. DE '144 is thus silent as to any need to control the ratio of NCO to the isocyanate reactive groups present in both component (a1) and optional component (a7). Indeed, the fact that component (a7) is optional in DE '144 indicates that it fails to recognize the importance of the urethane links with the solely thermally curable component (a7).

Thus, DE '144 leads one of skill in the art away from the recognition that a certain amount of urethane bonds *must* link a solely thermally curable crosslinking component to both the radiation curable component *and* the thermally curable component.

Rather DE '144 motivates one of skill in the to think that a solely thermally curable binder component is merely optional and that a particular amount of urethane crosslinks to a solely thermally curable crosslinking component is neither desired or required to obtain an advantageous coating composition.

A reference that leads one of skill in the art away from the claimed invention cannot provide a prima facie case of obviousness. For example, the Federal Circuit has clearly stated that "each prior art reference must be evaluated as an entirety, and ...all of the prior art must be evaluated as a whole". *In re Fritch*, 23 USPQ2d 1780, 1782. (Fed. Cir. 1992).

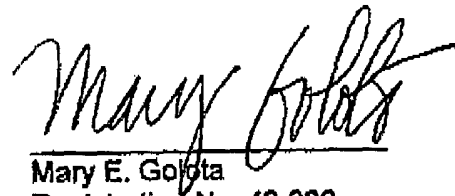
An evaluation of DE '144 indicates that it does not motivate one of skill in the art to do what Applicants have done. As such, it fails to provide a prima facie case of obviousness per MPEP 2143.

Accordingly, reconsideration and removal of the rejection is respectfully requested with respect to amended claim 1 and the dependent claims incorporating the limitations of claim 1.

#### CONCLUSION

Reconsideration and removal of the rejections is respectfully requested with respect to claims 1-25 in view of the foregoing amendments and/or remarks.

Respectfully Submitted,



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